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## RHIZOSOLENIA GRACILIS, n. sp.

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Some years ago I discovered in filterings of Lake Erie water, at Cleveland, Ohio, the only known form of the genus *Rhizosolenia* living in fresh water, and described it under the name of *R. Eriensis*. I have now the pleasure of adding a new species from the same lake, from filterings of the Niagara River water-supply at Buffalo, N. Y., kindly sent to me by Henry Mills, Esq., of that city. The filtering was full of the new species, along with a fair supply of *R. Eriensis*. The frustules of the new species are not as firmly silicious as those of *R. Eriensis*, and it will not stand treatment with acids at all. From its long, slender body and delicate bristle, I have named it *R. gracilis*, and I give a figure of it, contrasted with *R. Eriensis*. (Plate IV, fig. 1, a, *R. Eriensis*; b, b', *R. gracilis*.)

*R. gracilis*, n. sp. H. L. S.: Frustules small, slender, round, or but slightly compressed; annuli, obsolete; body smooth; fifteen to twenty times as long as broad; imperfectly silicious; calyptra, conical; bristle fully as long as the body, or longer; often slightly curved, and, with the calyptra, rigidly silicious; length, .004 to .008 in. *Habitat* filterings of the Niagara River, Buffalo, N. Y.

In the mixed gathering, the new species is detected at once from *R. Eriensis* by the long, curved bristle, and the body is much longer; and when equally small frustules of *R. Eriensis* are found, they show very distinctly the strong markings (annuli) of this species. I have not been able to detect any striation yet upon the frustules of the new species, though I have tried with glasses which resolved *A. pellucida* in balsam. Mr. Mills also writes that he has

failed to detect any striation. The nearest allied species is *R. setigera* of Brightwell.

The occurrence of this, hitherto only known as a marine genus, in fresh water, points back to the time when the Great Lakes were connected with the ocean, and the possible survival of marine forms during the long period of change from salt to fresh water. I have already alluded to this in the discovery of an *Actinocyclus*, and also the limited and peculiar forms of certain fresh-water species of *Tabellariæ* and *Synedræ*. Of late years the *Actinocyclus* has become very rare, and the *Stephanodiscus Niagara*, once exceedingly abundant, is now almost absent from recent filterings.

A curious instance of the occurrence of a marine species came to my notice in 1860, from Cleveland, Ohio. Mr. Neil of that place sent to me a gathering from a pond near the railroad, which contained an abundance of *Pleurosigma delicatatum*, and which up to this time had only been known as a marine species, though now it is considered brackish. I had this species living for weeks in fresh water; during the summer the pond was dried up, and this diatom has never been found in Cleveland, or indeed anywhere in the United States since, until the past summer, when Mr. B. W. Thomas, of Chicago, obtained a very plentiful supply from a pond near that city. The delicate diagonal striation of this *pleurosigma* makes it a good test for a  $\frac{1}{4}$  in. dry objective, and its sudden appearance in a place that had been hunted over for diatoms, now for many years, very thoroughly, and which can be paralleled by many similar experiences of equally sudden appearances and disappearances, is yet to be explained. For many successive years, I found at Gambier, Ohio, long filaments of a straight form of *Meridion constrictum*, in a pond which was thoroughly dried and the ground baked hard during the summer. It was not found outside this pond, and finally, after a few years, it entirely disappeared, nor has it been observed there since.

The new species of *Rhizosolenia* that I have described, I now find very sparingly in mounted slides of *R. Eriensis*, prepared some years ago, but owing to their extreme fragility, a perfect specimen is very rare. *R. gracilis* evidently flourishes only in quiet waters, perhaps one reason it has not been detected before is owing to the fact that the least treatment with acids completely destroys all but the calyptra and bristle.